# DESIGN NOTES

1. Design is based on the assumption that the reinforced soil mass, methods of construction and quality of materials conform to the requirements of Hilfiker Retaining Walls.

2. Assumed Soil Characteristics:

   **SN - Retained Soils**
   Unit Weight: 125 pcf
   Internal Friction Angle: 34°
   Cohesion = 50 psf
   Bond Stress = 12 psi

   If actual characteristics, grades or dimensions of soil materials differ from those listed above or shown on the plans, the Spriralnail Engineer shall be notified to evaluate the need to redesign.

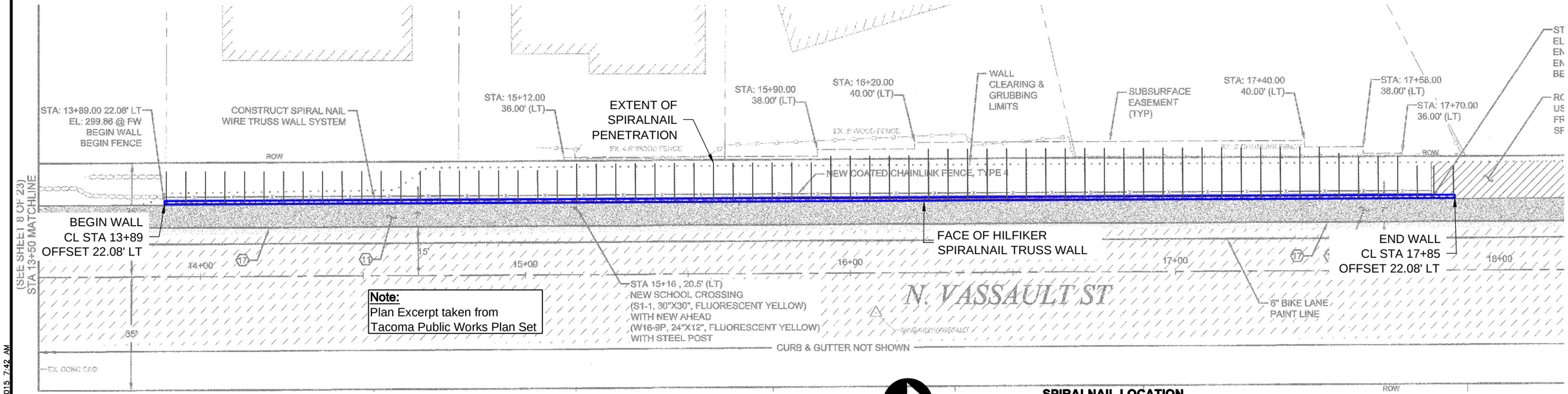
3. Design Procedure:
   Geotechnical Engineering Circular No. 7 - Soil Nail Walls
   FHWA Report No. FHWA0-IF-03-017.

4. Reference Drawings:
   - N. Vassault Street Sidewalk Improvements Project No. PWK-G0009 By Tacoma Public Works Department Dated March 2015.
   - Soils Boring Data Sheets B-1 & B-2 by GeoDesign for the City of Tacoma, May 2014.

5. Conflicts between the trusswall panels, pillasters or spiralnails and obstructions are resolved in the field by any combination of the following:
   a) Trimming the vertical truss wall panel wires and or bending vertical & horizontal wires to accommodate the penetration through the facing
   b) Trimming the bottom part of the pilaster
   c) Slight Re-orientation of the spiralnail angle or direction. If re-orientation of the pilaster or nails is more than one foot from the planned location, confirmation of the change shall be approved by OCP Engineers & Surveyors.

THE DESIGN CONTAINED ON THESE DRAWINGS IS PRELIMINARY IT IS BASED ON INFORMATION PROVIDED BY THE OWNER. ON THE BASIS OF THIS INFORMATION, OCP HAS DESIGNED FOR THE INTERNAL STABILITY OF THE STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER.

6. This design is intended to be responsible for the internal stability of the retaining wall only, and not for global stability or foundation bearing capacity. OCP is not responsible for job site drainage, safety and fall protection provisions including compliance with OSHA regulations, nor the Competent Person designated for daily inspection.




**Note:**
Plan Excerpt taken from Tacoma Public Works Plan Set

## SN TRUSS WALL - PLAN VIEW

*SCALE: 1" = 30'*

| SUPPLIED QUANTITY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TRUSS FACING (SF) | PILASTERS | | | | | | SPIRALNAILS | | | |
| 3348 | (5) 4.5' | (19) 6.5' | (13) 8.5' | (9) 10.5' | (18) 12.5' | (3) 14.5' | (104) 10' | (43) 12' | (30) 14' | (21) 16' |

**SPIRALNAIL LOCATION**
SPIRALNAILS ARE ARRANGED ON A VARIABLE VERTICAL PATTERN & 6' HORIZONTAL PATTERN, VARIATIONS OCCUR AS THE SHORING SLOPES UP OR DOWN.

**EXISTING INFRASTRUCTURE**
PIPING, UTILITIES, OR ANY OTHER UNDERGROUND ITEMS OR INFRASTRUCTURES MAY OR MAY NOT BE SHOWN. SPIRALNAILS WERE LOCATED ON THESE PLANS AS COULD BE BEST DETERMINED WTIH THE INFORMATION PROVIDED. PRECISE LOCATIONS SHALL BE ASCERTAINED IN THE FIELD PRIOR TO DRAWING APPROVAL AND CONFIRMED BY OTHERS. DESIGN APPROVAL WARRANTS NEITHER HILFIKER NOR ONTIVEROS WILL BE LIABLE FOR ANY DAMAGE CAUSED BY SPIRALNAIL INSTALLATIONS PERFORMED IN ACCORDANCE WITH THESE PLANS. CALL USA PRIOR TO ANY EXCAVATION OR NAIL INSTALLATION.

HW 140512BN

| REV.NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | 6/1/ 14 | KLC | Intial Electronic (.pdf) Release |

HILFIKER RETAINING WALLS
1902 Hilfiker Lane
Eureka, CA 95503-5711
TOLL-FREE 800.762.8962
PH 707.443.5093 FAX 707.443.2891
WEB SITE www.hilfiker.com E-MAIL info@hilfiker.com

ONTIVEROS CESARETTI & PREBOR
ENGINEERS AND SURVEYORS
404 N. Fortuna Blvd.
Fortuna, CA 95540
Phone (707) 725-7410
Fax (707) 725-7411
Ontiveros.Assoc@att.net

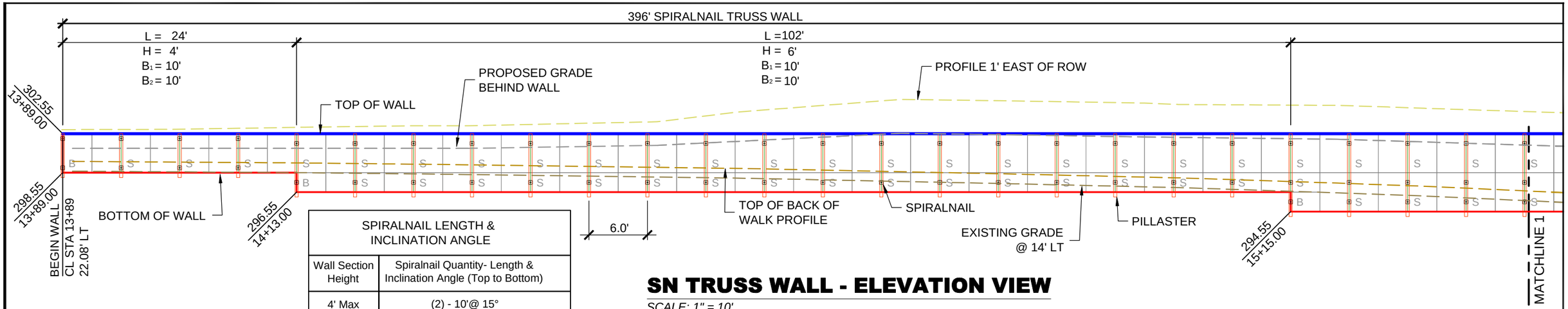
N. VASSAULT STREET SIDEWALK IMPROVEMENTS

GENERAL NOTES
SN TRUSS WALL PLAN VIEW

PROJECT 15-055
DATE 06-1-15
DESIGN KLC
DRAWN KLC

SHT 1 OF 5

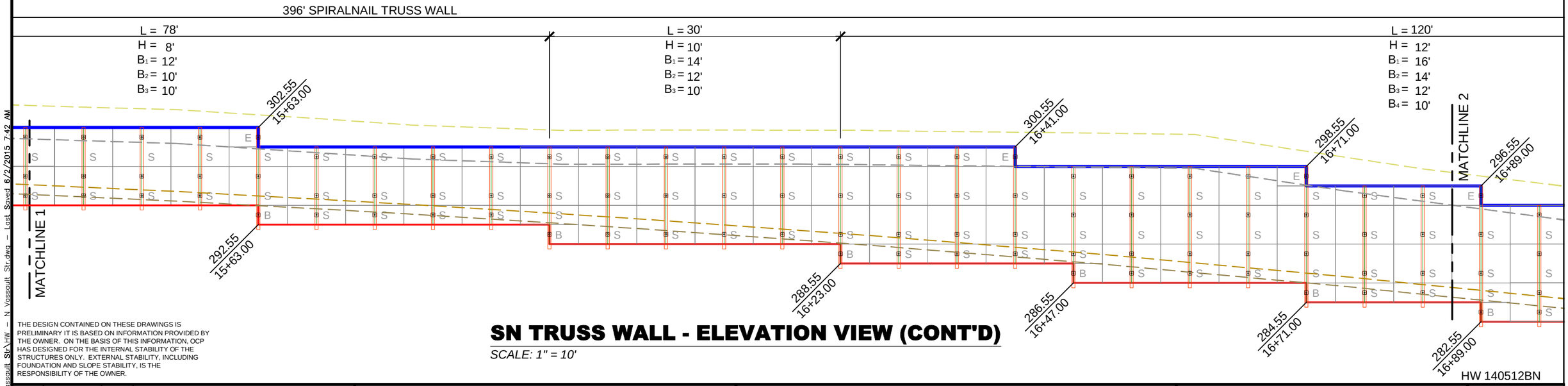
P:\15-055 HW - N. Vassault St\HW - N Vassault Str.dwg - Last Saved 6/2/2015 7:42 AM




| SPIRALNAIL LENGTH & INCLINATION ANGLE | |
|---|---|
| Wall Section Height | Spiralnail Quantity- Length & Inclination Angle (Top to Bottom) |
| 4' Max | (2) - 10'@ 15° |
| 6' Max | (2) - 10'@15° |
| 8' Max | (1) - 12'@15°<br>(2) - 10'@15° |
| 10' Max | (1) - 14'@15°<br>(1) - 12'@15°<br>(1) - 10'@15° |
| 12' Max | (1) - 16'@15°<br>(1) - 14'@15°<br>(1) - 12'@15°<br>(1) - 10'@15° |

## SN TRUSS WALL - ELEVATION VIEW

*SCALE: 1" = 10'*




## SN TRUSS WALL - ELEVATION VIEW (CONT'D)

*SCALE: 1" = 10'*

HW 140512BN

THE DESIGN CONTAINED ON THESE DRAWINGS IS PRELIMINARY IT IS BASED ON INFORMATION PROVIDED BY THE OWNER. ON THE BASIS OF THIS INFORMATION, OCP HAS DESIGNED FOR THE INTERNAL STABILITY OF THE STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER.

| REV.NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | 6/1/ 14 | KLC | Intial Electronic (.pdf) Release |


HILFIKER RETAINING WALLS
1902 Hilfiker Lane
Eureka, CA 95503-5711
TOLL-FREE 800.762.8962
PH 707.443.5093 FAX 707.443.2891
WEB SITE www.hilfiker.com E-MAIL info@hilfiker.com

ONTIVEROS CESARETTI & PREBOR
ENGINEERS AND SURVEYORS
404 N. Fortuna Blvd.
Fortuna, CA 95540
Phone (707) 725-7410
Fax (707) 725-7411
Ontiveros.Assoc@att.net

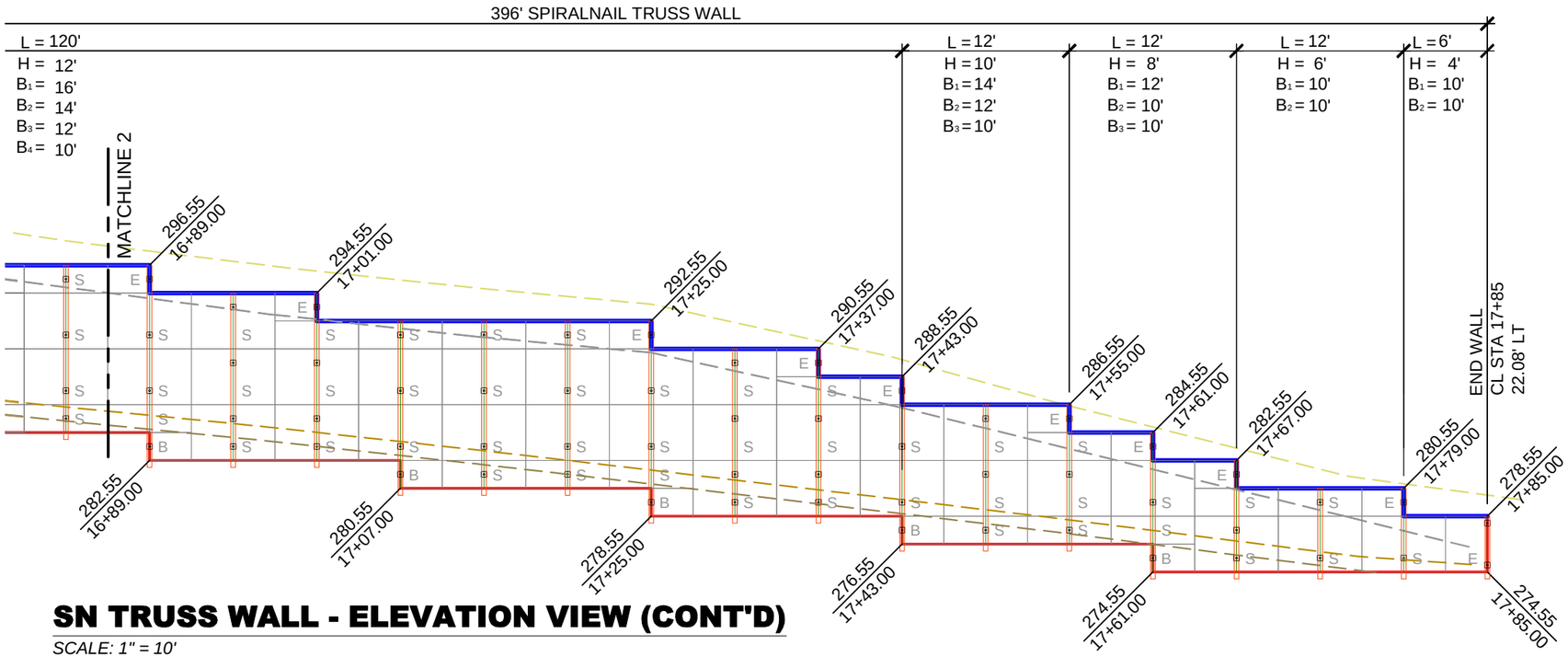

N. VASSAULT STREET SIDEWALK IMPROVEMENTS

SN TRUSS WALL ELEVATION VIEW

| | |
|---|---|
| PROJECT | 15-055 |
| DATE | 06-1-15 |
| DESIGN | KLC |
| DRAWN | KLC |

SHT 2 OF 5

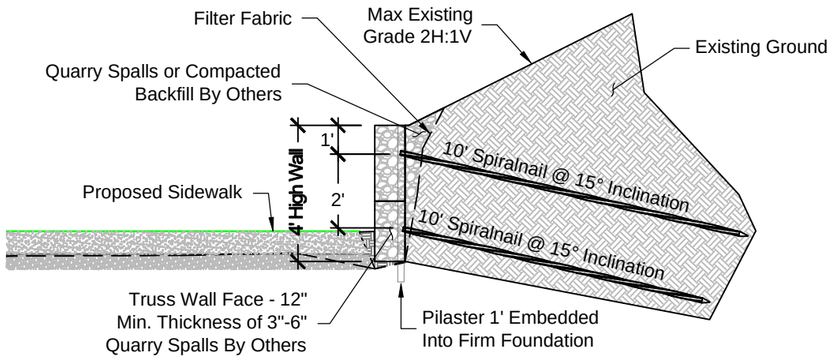
P:\15-055 HW – N. Vassault St\HW – N Vassault Str.dwg – Last Saved 6/2/2015 7:42 AM




## SN TRUSS WALL - ELEVATION VIEW (CONT'D)

*SCALE: 1" = 10'*

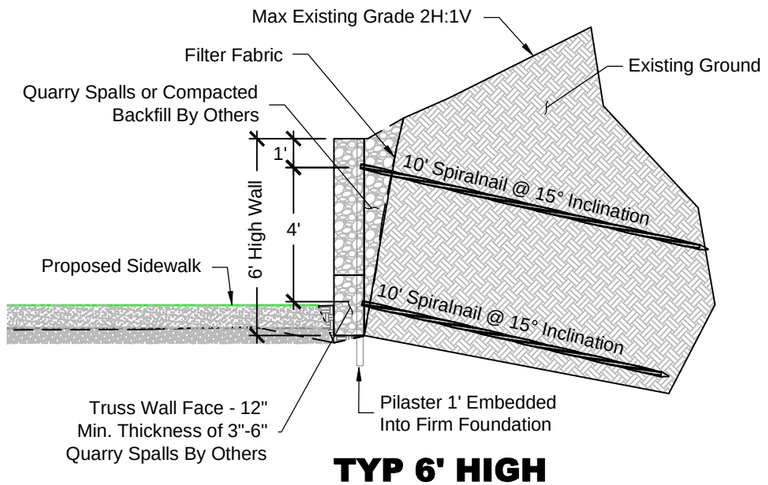
| SPIRALNAIL LENGTH & INCLINATION ANGLE | |
|---|---|
| Wall Section Height | Spiralnail Quantity- Length & Inclination Angle (Top to Bottom) |
| 4' Max | (2) - 10'@ 15° |
| 6' Max | (2) - 10'@15° |
| 8' Max | (1) - 12'@15°<br>(2) - 10'@15° |
| 10' Max | (1) - 14'@15°<br>(1) - 12'@15°<br>(1) - 10'@15° |
| 12' Max | (1) - 16'@15°<br>(1) - 14'@15°<br>(1) - 12'@15°<br>(1) - 10'@15° |




## TYP 4' HIGH CROSS SECTION

*SCALE: 1" = 5'*

**Note:**
The Spiralnail Trusswall System does not require a drainage system when constructed using free draining backfill. This design proposes using free draining quarry spalls. Should field conditions uncover wet subsurface or unsuitable moist conditions, or otherwise warrant additional drainage, such drainage shall be designed and installed by others. If the owner desires to add 4" perforated piping behind the quarry spall facing, additional excavation will be required into the existing slope to accommodate the pipe behind the pilasters.




## TYP 6' HIGH CROSS SECTION

*SCALE: 1" = 5'*

THE DESIGN CONTAINED ON THESE DRAWINGS IS PRELIMINARY IT IS BASED ON INFORMATION PROVIDED BY THE OWNER. ON THE BASIS OF THIS INFORMATION, OCP HAS DESIGNED FOR THE INTERNAL STABILITY OF THE STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER.

HW 140512BN

| REV.NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | 6/1/ 14 | KLC | Intial Electronic (.pdf) Release |

HILFIKER RETAINING WALLS
1902 Hilfiker Lane
Eureka, CA 95503-5711
TOLL-FREE 800.762.8962
PH 707.443.5093 FAX 707.443.2891
WEB SITE www.hilfiker.com E-MAIL info@hilfiker.com

ONTIVEROS CESARETTI & PREBOR
ENGINEERS AND SURVEYORS
404 N. Fortuna Blvd.
Fortuna, CA 95540
Phone (707) 725-7410
Fax (707) 725-7411
Ontiveros.Assoc@att.net

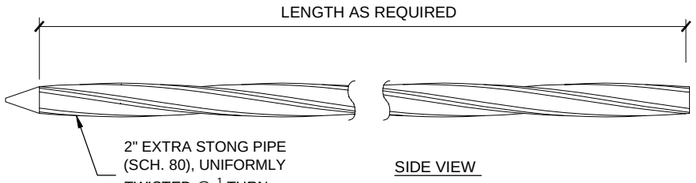
N. VASSAULT STREET SIDEWALK IMPROVEMENTS

SN TRUSS WALL ELEVATION VIEW

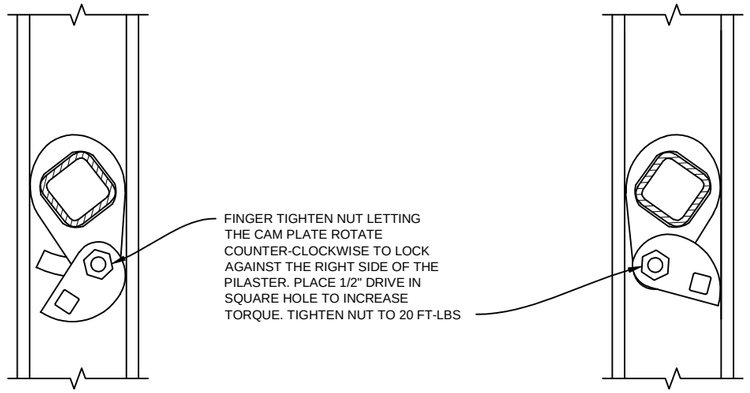
PROJECT 15-055
DATE 06-1-15
DESIGN KLC
DRAWN KLC

SHT 3 OF 5

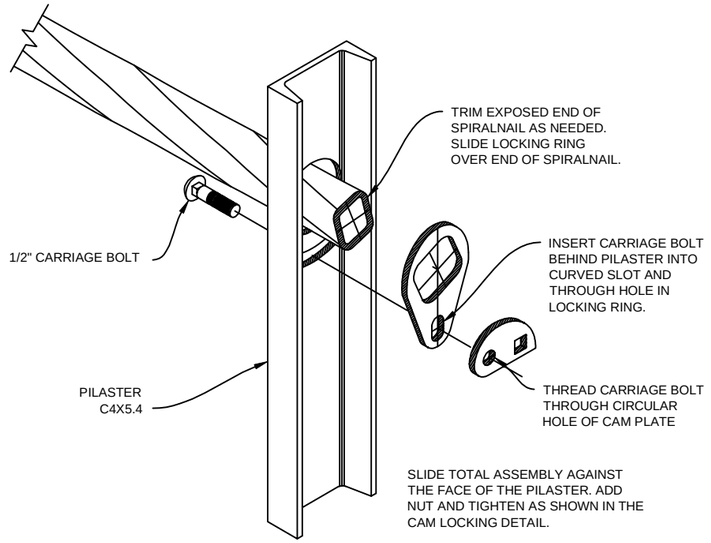
P:\15-055 HW – N. Vassault St\HW – N Vassault Str.dwg – Last Saved 6/2/2015 7:42 AM



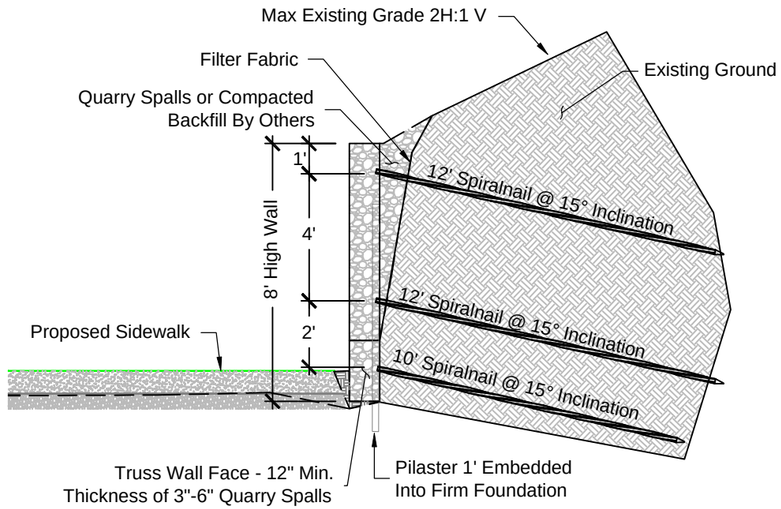

**SPIRAL NAIL**
NOT TO SCALE



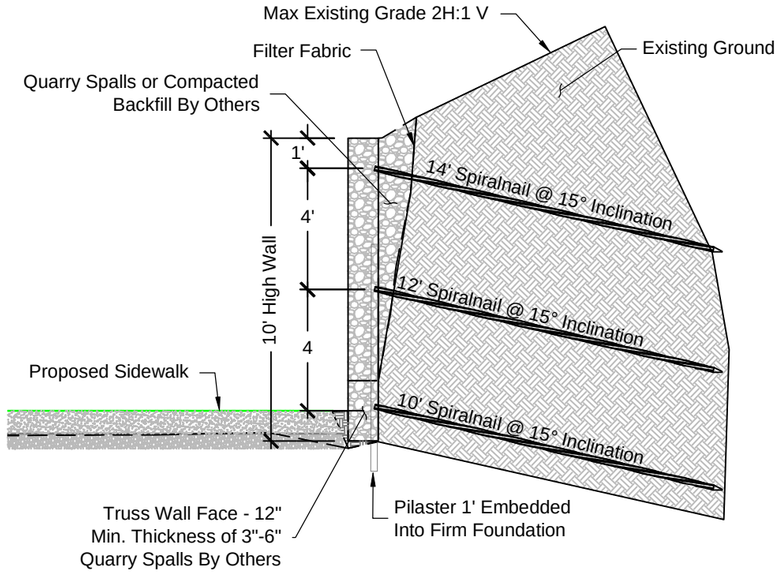

**CAM LOCK LOCKING DETAIL**
NOT TO SCALE



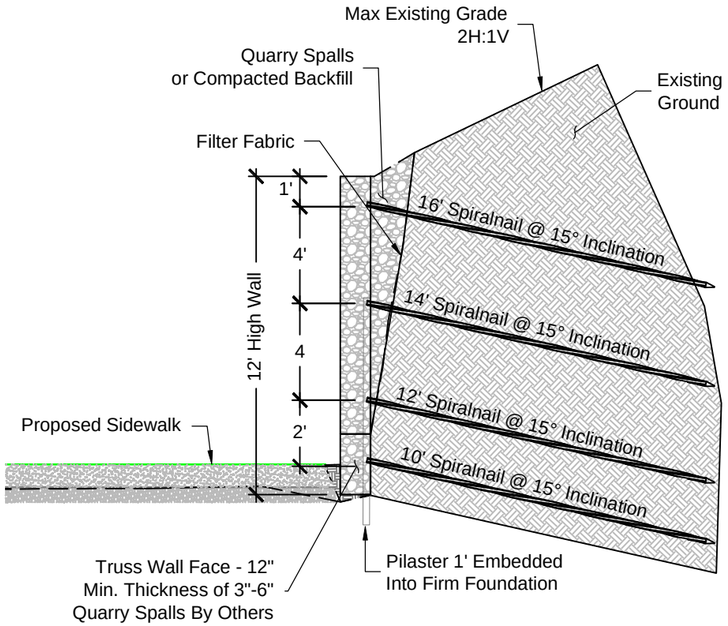

**CAM LOCK ASSEMBLY**
NOT TO SCALE




**TYP 8' HIGH CROSS SECTION**
*NTS*




**TYP 10' HIGH CROSS SECTION**
*NTS*




**TYP 12' HIGH CROSS SECTION**
*NTS*

THE DESIGN CONTAINED ON THESE DRAWINGS IS PRELIMINARY IT IS BASED ON INFORMATION PROVIDED BY THE OWNER. ON THE BASIS OF THIS INFORMATION, OCP HAS DESIGNED FOR THE INTERNAL STABILITY OF THE STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER.

HW 140512BN

| REV.NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | 6/1/ 14 | KLC | Intial Electronic (.pdf) Release |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |


**HILFIKER RETAINING WALLS**
1902 Hilfiker Lane
Eureka, CA 95503-5711
TOLL-FREE **800.762.8962**
PH **707.443.5093** FAX **707.443.2891**
WEB SITE www.hilfiker.com E-MAIL info@hilfiker.com

ONTIVEROS CESARETTI & PREBOR
ENGINEERS AND SURVEYORS
404 N. Fortuna Blvd.
Fortuna, CA 95540
Phone (707) 725-7410
Fax (707) 725-7411
Ontiveros.Assoc@att.net


**N. VASSAULT STREET SIDEWALK IMPROVEMENTS**

SN TRUSS WALL CROSS SECTIONS & DETAILS

| | |
|---|---|
| PROJECT | 15-055 |
| DATE | 06-1-15 |
| DESIGN | KLC |
| DRAWN | KLC |

SHT 4 OF 5

P:\15-055 HW – N. Vassault St\HW – N Vassault Str.dwg – Last Saved 6/2/2015 7:42 AM

## STEP 1

IF PREPARED SOIL WILL SUPPORT PILASTERS, POSITION PILASTERS EVERY SIX FEET ALONG WALL LAYOUT LINE AND SET BOTTOM OF PILASTER INTO GROUND PER PROJECT PLANS.

IF PILASTERS CANNOT BE PRE-POSITIONED, PLACE START/END TRUSS ON PREPARED SLOPE FIRST THEN POSITION THE PILASTER CHANNEL AGAINST THE EDGE OF THE TRUSS AND SET BOTTOM OF PILASTER INTO GROUND PER PROJECT PLANS. DRIVE SPIRALNAILS THROUGH THE PILASTER INTO THE SOIL. PLACE CAM LOCK ON EACH SPIRALNAIL AND TIGHTEN TO TORQUE SPECIFICATIONS.

## STEP 2

IF PILASTERS HAVE NOT BEEN PRE-POSITIONED, POSITION NEXT PILASTER AND SET INTO GROUND. PLACE THE STANDARD TRUSS BEHIND PILASTER AND OVERLAP PANEL AGAINST THE START/END TRUSS USING ZIP TIES OR TIE WIRE TO SECURE TRUSS IN PLACE. DRIVE IN SPIRALNAILS AND LOCK WITH CAM LOCKS.

CONTINUE ADDING STANDARD TRUSSES ALONG WALL ENDING AT FINAL PILASTER WITH A START/END TRUSS

## STEP 3

POSITION START/END TRUSS, ADD PILASTER IF NEEDED, DRIVE IN SPIRALNAILS AND LOCK IN PLACE WITH CAM LOCKS.

SPIRAL TIE THE STIFFENERS ONTO THE STANDARD TRUSSES AT WIRE ON RIGHT SIDE OF PILASTER.

## STEP 4

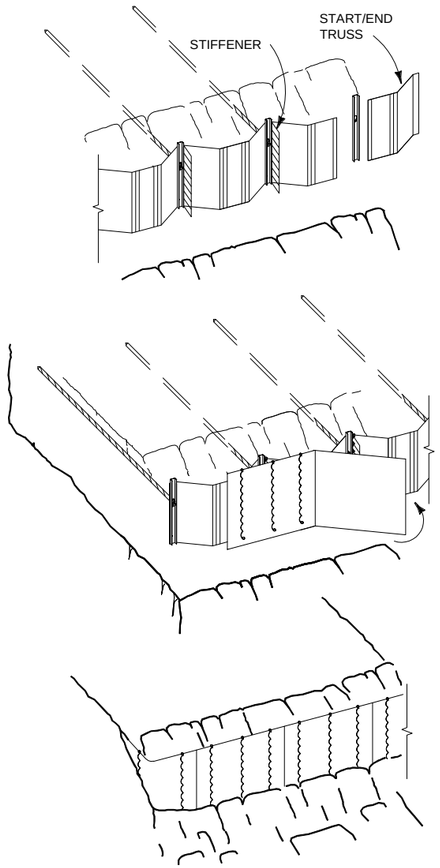
TO BEGIN FACING THE WALL, CENTER EDGES OF A FACING PANEL ON TRUSS OVERLAP. SPIRAL THE ENDS OF OVERLAP AND THE STIFFENER TO FACE PANEL.

INSERT PRONGS OF SUBSEQUENT FACE PANELS BEHIND FINAL TRANSVERSE WIRE ON PREVIOUS FACING AND ROTATE INTO PLACE TO FORM INTERLOCKING CONNECTION.
SEE ENLARGED DETAIL.

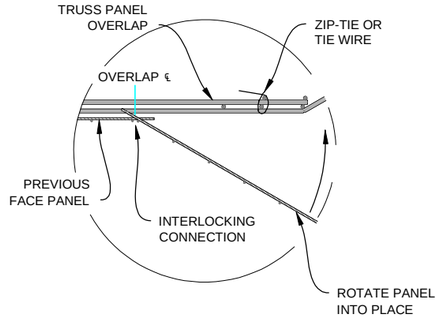
## STEP 5

FOR CLOSURE FACING AT EACH END OF WALL, BEND FACING PANEL PER PROJECT PLANS AND INSERT END OF PANEL AGAINST PREVIOUS FACING. FIELD FIT OPPOSITE END AND TRIM AS NEEDED AGAINST SLOPE. SPIRAL FACING TO START/END TRUSS PANEL AND TO STIFFENER. SEE END OF WALL TREATMENT DETAIL, THIS SHEET.

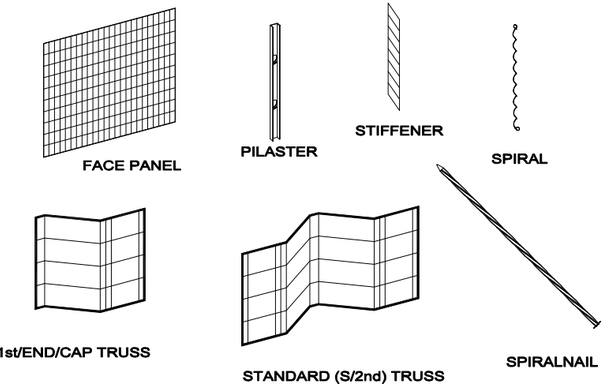
FILL AREA BEHIND WALL WITH BACKFILL PER PROJECT PLANS. COMPACT SOIL AGAINST FACE OF WALL FOR TOE BURY.




# CONSTRUCTION SEQUENCE

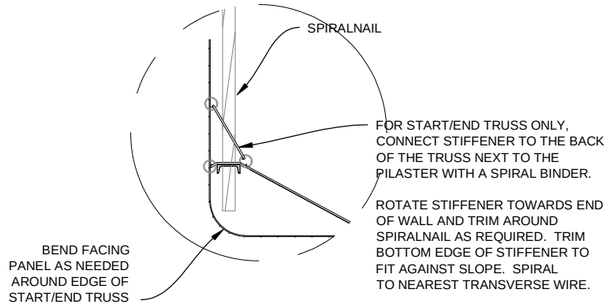



**INTERLOCK CONNECTION DETAIL**
NOT TO SCALE



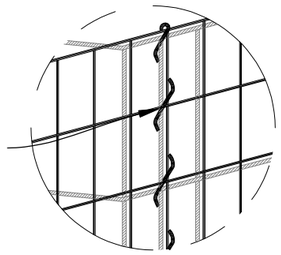

**WALL COMPONENTS**
NOT TO SCALE

GENERIC COMPONENTS SHOWN
FOR ILLUSTRATION PURPOSES ONLY




**END OF WALL TREATMENT**
NOT TO SCALE

SPIRAL BINDER IS TO BE PLACED SO THAT IT ENCIRCLES BOTH THE HORIZONTAL AND VERTICAL WIRES AND PASSES IN FRONT OF THE HORIZONTAL WIRE IN THE FACE OF WALL AT EACH INTERSECTION.



**SPIRAL BINDER ATTACHMENT**
NOT TO SCALE

THE DESIGN CONTAINED ON THESE DRAWINGS IS PRELIMINARY IT IS BASED ON INFORMATION PROVIDED BY THE OWNER. ON THE BASIS OF THIS INFORMATION, OCP HAS DESIGNED FOR THE INTERNAL STABILITY OF THE STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER.

HW 140512BN

| REV.NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | 6/1/ 14 | KLC | Intial Electronic (.pdf) Release |


HILFIKER RETAINING WALLS
1902 Hilfiker Lane
Eureka, CA 95503-5711
TOLL-FREE 800.762.8962
PH 707.443.5093 FAX 707.443.2891
WEB SITE www.hilfiker.com E-MAIL info@hilfiker.com

ONTIVEROS CESARETTI & PREBOR
ENGINEERS AND SURVEYORS
404 N. Fortuna Blvd.
Fortuna, CA 95540
Phone (707) 725-7410
Fax (707) 725-7411
Ontiveros.Assoc@att.net


N. VASSAULT STREET SIDEWALK IMPROVEMENTS

SN TRUSS WALL DETAILS

| | |
|---|---|
| PROJECT | 15-055 |
| DATE | 06-1-15 |
| DESIGN | KLC |
| DRAWN | KLC |

SHT 5 OF 5

P:\15-055 HW – N. Vassault St\HW – N. Vassault Str.dwg – Last Saved 6/2/2015 7:42 AM